



Time Critical Diagnosis System Report

Missouri Department of Health and Senior Services

2021



Executive Summary

The Time Critical Diagnosis (TCD) system is a voluntary statewide program established to coordinate care for select medical conditions where time to treatment is a critical component of recovery. TCD has officially been in existence since 2008 when then-Governor Matt Blunt signed legislation into law making it a program under the Department of Health and Senior Services (DHSS). But, its roots go much deeper than that as trauma services organized back in the 1990s. Missouri actually has the distinction of being the first state in the nation to implement and fund a statewide program. Many states across the U.S. followed Missouri's example and established programs of their own. Additionally, several national accreditation organizations also developed TCD programs.

Since its inception 16 years ago, multiple hospitals across the state applied for, successfully passed a survey process, and received designation as a Trauma, Stroke, or ST-elevation myocardial infarction (STEMI) - a type of "heart attack" Center indicating that they had the staffing, expertise, and equipment to provide the highest level of care possible. In 2017, DHSS established a statewide TCD Task Force composed of key industry leaders to identify opportunities for growth that could help put Missouri's program among the nation's best.

Over the next two years, the Task Force worked on a variety of potential projects, but the momentum of the Task Force slowed during the COVID-19 pandemic. This report is one of the Task Force's efforts over the last year, and is intended to provide stakeholders with the program's history, a summary of the current state of the program and plans for the future.

TCD is all about being able to get the patient to the right place for the right care as quickly as possible, and Missouri has seen considerable progress in recent years in lessening the time it takes to receive lifesaving diagnoses. For example, between 2016-2022, one Level III Stroke Center was able to reduce their door-in-door-out time (time from patient presentation to patient discharge from the transferring hospital) by 57%.

The State of TCD

As of December 2021, there are 29 trauma programs, 68 stroke programs, and 59 STEMI Centers that have received designation. There are 217 licensed ground Emergency Medical Services (EMS) agencies, and 12 air ambulances (helicopters) that are key participants, to ensure that this specific group of patients get to a designated facility to receive lifesaving care. Thousands of patients have received treatment under the program and returned to home and work, continuing as productive members of their communities. The program has come a long way since its inception, and working in tandem with the TCD Task Force, will continue efforts to make Missouri's program among the best in the nation. Some of the more recent accomplishments, in addition to this first published report, includes a process for comprehensive EMS data acquisition, a hybrid survey designation process that incorporates virtual technology with on-site presence, operational goals and identification and application of best practices.

Time Critical Diagnosis System

Prompt treatment for serious or life-threatening conditions reduces disability and improves patient outcomes. Research over time clearly shows that an organized, integrated, system based on regional medical resources saves the most lives and decreases permanent injuries and lifelong disabilities. The process for designating hospitals as trauma centers has been in place in Missouri since the early 1990s. In order to ensure access for definitive treatment, regardless of where a Missourian is injured, many trauma healthcare experts and partner groups have joined together to address these gaps as part of the work to create the Time Critical Diagnosis System. Designated trauma centers in Missouri meet standards to provide definitive and timely treatment for trauma patients.

A 3-year-old female was riding a tricycle in a cul-de-sac when an elderly driver backed out of the driveway, not seeing the child. EMS arrived within 6 minutes of the accident. The patient was unresponsive, moaning and combative. The child sustained a laceration to the scalp, face and had exposed skull with bruising to the flank area. EMS secured an IV and applied oxygen prior to arrival of air ambulance. The air ambulance spent 11 minutes on the ground securing an airway. The patient was flown to a pediatric trauma center 1 hour and 45 minutes after injury with a full trauma team at the bedside when the child arrived. The patient was resuscitated and taken to the Pediatric Intensive Care Unit (PICU) with a diagnosis of a head injury, chest injury, arm fracture and a spleen injury. After 4 days in the PICU, the child started to wake up. On day 13, she was transferred to a rehabilitation facility where she spent 3 weeks doing rehab prior to returning home. She had an amazing recovery and resumed full activity 3 months after the accident, in part because of her initial transport to a pediatric trauma center in an expeditious manner.

This is the benefit of the TCD system – being able to get the patient to the right place for the right care as quickly as possible.

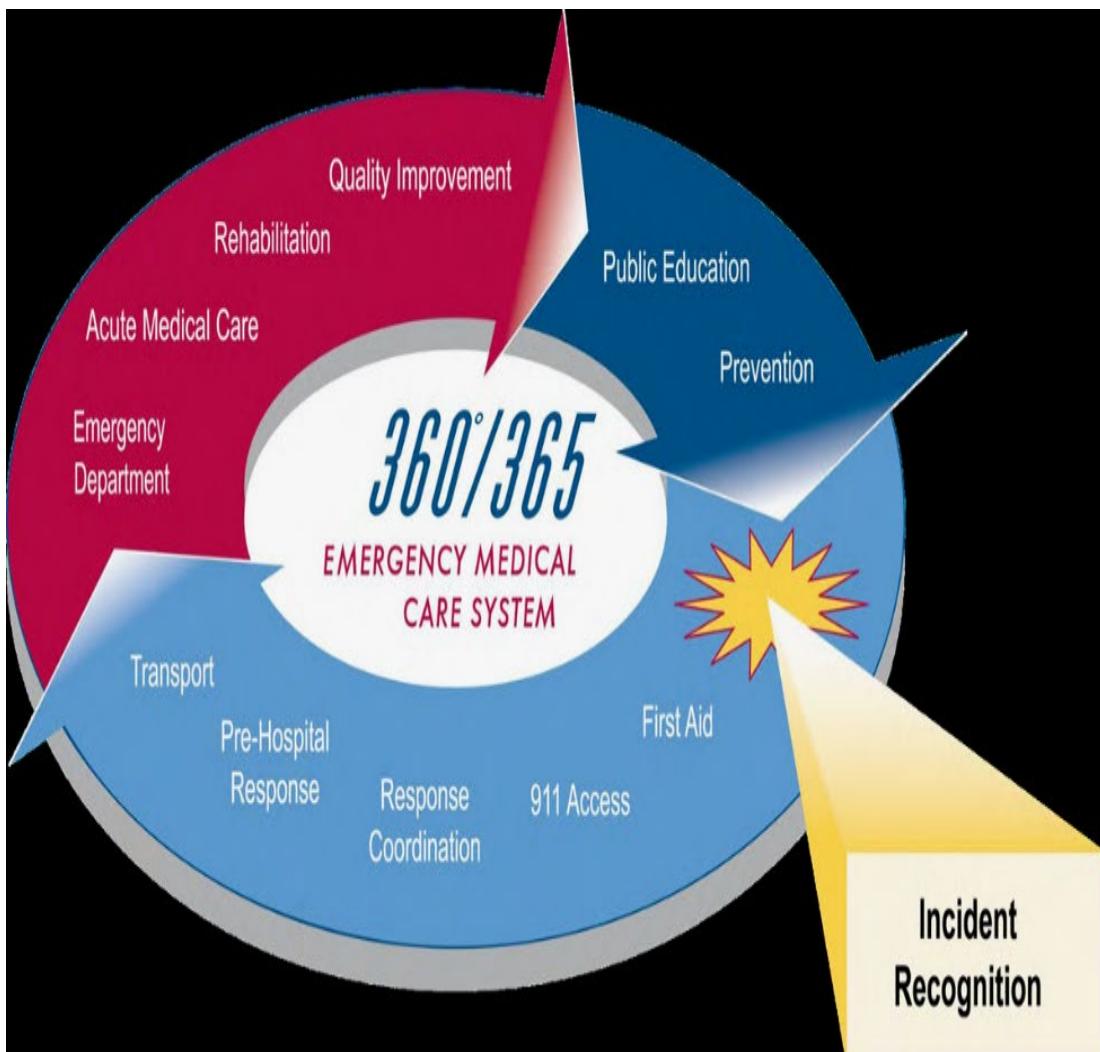
The Time Critical Diagnosis System is a means to organize care for three major classifications of medical conditions: Trauma, STEMI, and Stroke. For each of these conditions, time is the key – the sooner that care is initiated, the more likely the patient can recover from the condition or injury suffered.

There are four major components of the TCD System: 9-1-1 initiation and response, Emergency Medical Services (EMS), Hospitals and Rehabilitation services.

- The patient's first encounter with the TCD System is with 9-1-1 and EMS, which is responsible for evaluating the patient based on their signs and symptoms, and then ensuring the patient is rapidly transported to the closest designated and appropriate hospital that can provide the level of care needed for the patient's medical condition.
- EMS determines whether the patient will be transported by air ambulance or ground ambulance. They are also primarily responsible for determining which facility to

transport the patient, which is driven by their regional or state TCD transport protocols.

- Hospitals are responsible for quickly evaluating the patient, determining what resources are needed based on the patient's condition or injury, and then initiating the appropriate care necessary.
- Rehabilitation, public education, and injury and illness prevention are the final parts of the system, responsible for helping the patient recover from their condition or injuries to the fullest extent possible and education to prevent further injury or illness in the future.



Great STEMI Save

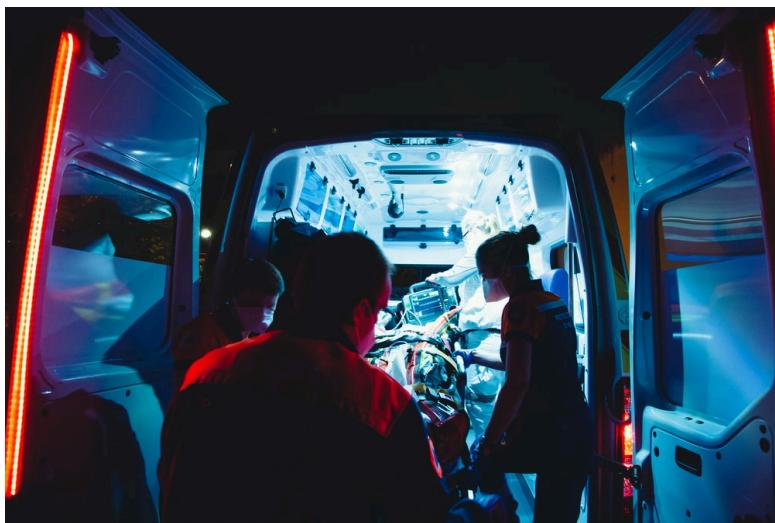
A woman began having chest pain while driving. She pulled off the road and called her son, who is a paramedic. He instructed her to stay put and called for an ambulance. After pinpointing the woman's location and with time of essence, it was determined that an Air Ambulance would be the fastest way to get the woman to the hospital, so a helicopter was dispatched to the scene. As the woman was being loaded into the helicopter, the Flight Nurse evaluated available hospitals and determined there was a TCD-designated hospital within a very short flight time with necessary expertise to provide appropriate cardiac care. As part of the process, the Flight Nurse caring for the patient at the scene notified the hospital to activate their cardiac care team. The woman was transported and upon arrival at the hospital, she was taken directly to the heart catheterization lab, where she received a stent to open a blocked cardiac artery. The flight nurse commented afterwards that the process worked as designed, allowing the cardiac artery to be opened much sooner, which saved a significant amount of heart muscle and allowed for a more complete recovery.

History of Missouri's Time Critical Diagnosis System

Right patient, right place, right time

Missouri's trauma system was designed and implemented by Dr. Frank Mitchell, with strong support from the America College of Surgeons; nothing similar exists for stroke or STEMI. Prior to 2003, the concept of an organized Time Critical Diagnosis System was just a dream. It was during a conversation among state medical experts around a table at a local restaurant that the dream began to take shape. At that time, it was widely recognized that

trauma injures were time-critical, but it was also evident that stroke and heart attack patients had similar needs. Experts around the state were discussing the need, and as the conversation progressed, multiple questions arose that would require further discussion and planning. How could Missouri develop a system that includes cutting-edge treatment, educating medical professionals, healthcare organizations, the public, and the leaders of the State?



What needs to be done to make pre-hospital care better? Who can help make this happen? While it was clear that there was much work to do, the consensus was that development of a statewide system benefitting all Missourians was well worth pursuing.

In order to function as envisioned the system had to account for the care of the patient across the spectrum, starting with the transport team. The Missouri Foundation for Health (MFH) and DHSS began working together to plan efforts. Planning began by organizing discussions with EMS and the trauma care community, Emergency Department Physicians, state health officials and other health care system professionals, to identify gaps and look for improvement opportunities.

DHSS engaged the State Advisory Council for EMS (SAC) Chair Dr. Bill Jermyn, who brought decades of emergency medical experience to the planning process. Dr. Jermyn quickly became the leader of this effort, and ultimately became the state's pre-eminent Time Critical Diagnosis Champion. System components would be patterned after national standards, so that practices, policies and procedures, regulations and other necessary components would align with national standards for improvement of trauma, stroke and STEMI care. The system would need to start at initial patient contact by EMS, and include transport of the patient to hospitals, care provided in emergency departments and inpatient diagnosis and treatment facilities, transfer to rehabilitation services where appropriate, and ending when the patient discharges to home or next level care facility. The system needed to be data-driven, have a quality care focus, and be accountable to multiple stakeholders including the residents of Missouri.

Work continued until the framework of a comprehensive statewide infrastructure began to take shape. The system would focus on timely assessment and transport to facilities that could provide definitive care. It would include the ability to accommodate changes needed as medical treatments evolve. It would be quality and data-driven and work to promote quality of life for our patients after suffering a time-critical event. By 2007, the program design was complete and proposed legislation was introduced to create the TCD program under state law. In 2008, the bill passed and was signed by Governor Blunt, officially creating the Missouri TCD Program.

TCD Moves Forward

Missouri has the proud distinction of being the first state in the nation to develop a TCD Program. Despite this early success, TCD remained an unfamiliar concept to the public, not only in Missouri, but across the rest of the country. Questions remained about the purpose and intent of the program, but TCD proponents continued to educate the public about the benefits and important impact on health care in Missouri. Over the next 16 years, 158 TCD designations were awarded to hospitals across the state based on the level of expertise they demonstrated. Work also continued during that time to improve how the system functioned.

In 2017, DHSS organized a TCD Task Force to form a partnership between industry experts and DHSS to identify opportunities for improvement. The Task Force initially worked on direction and strategy until COVID slowed their forward progress. In November of 2020, the Task Force started meeting monthly with a renewed energy and sense of purpose.

Standing on the Shoulders of Giants



Sir Isaac Newton said, "If I have seen further it is by standing on the shoulders of Giants." That quote certainly applies to the TCD System. From early on the TCD Program continued to develop and grow thanks to the dedication of many professionals involved in the process. There is not enough room in this report to thank all of the individuals who helped get TCD to where it is today, but the program would like to recognize Drs. Bill Jermyn, Samar Muzaffar and Lynthia Andrews-Bowman for their efforts.



Bill Jermyn, D.O.



Samar Muzaffar, M.D.



*Lynthia Andrews-Bowman,
D.O.*

Key Highlights from 2021

- Establishment of TCD Steering Committee to provide strategic direction for the Task Force.
- Engaged in process improvement, which led to establishment of four operational goals for the Department and Task Force to work on in 2022.
- Addition of Thrombectomy-capable stroke centers to the Stroke regulations.
- Development of legislative and data subcommittees to assist in performance improvement opportunities.



Program 2022 Goals

1. No diversion statewide for TCD Diagnosis Patients – assuming facility is operational and there are no infrastructure or other critical operating issues that would prevent or impact quality care.

TCD diagnoses are considered to be critical, requiring immediate care. It cannot be described any better than when referring to the timeliness of stroke care as “Time is Brain.” TCD is a voluntary program and hospitals are designated specific levels based on their capabilities and capacity to provide advanced level care. Looking at the map, TCD programs are not uniformly distributed across the state. This is not a design flaw; rather a result of hospitals being located near cities and other population centers. The founding principle of the TCD Program, no matter where you are located in the state of Missouri, you should not receive any less, substandard of care; but rather have the same access to urgent, life-saving care regardless of a rural or urban location. So a patient in a small town or a rural location should have the same access to rapid treatment as a patient who lives in one of the larger metropolitan areas. While there is great benefit to the people of Missouri who live in or in close proximity to these facilities, there is need to ensure that people in smaller communities and rural locations can get access to care within specified timeframes. Our partnership with EMS agencies and hospitals across the state is key to rapid intervention of appropriate care.

Diversion occurs when hospitals are closed to incoming patients. This occurs for a variety of reasons, including loss of critical infrastructure or other safety reasons, staffing shortages, or the facility being close to or at capacity for staffed beds. Hospitals are very averse to going on diversion and do not make the decision lightly. When a hospital goes on diversion, it is usually due to unusual circumstances that either prevent or seriously compromise its ability to provide appropriate care. The problem is that for patients who live farther away from these facilities, transport time is part of the total time from when the patient began to experience symptoms or was involved in a traumatic event. If the closest designated facility is on diversion, travelling to the next closest facility will increase the time to intervention. Our major concern with TCD diversion is that it may extend treatment initiation beyond the targeted time to treat, which can delay, limit or render ineffective appropriate treatment for the patient’s condition. There are generally accepted guidelines for when hospitals go on diversion, but no established thresholds. As a result, there is inconsistency across the state for the level of tolerance to conditions that hospitals are willing to endure before deciding to go on diversion. The intent of this goal will be to develop a standard definition and guidance for diversion of TCD patients for all hospitals across the state.

2. Establish a formal process to review TCD centers that fail to meet criteria during the designation period.

- **Work toward reducing and eliminating settlement agreements for TCD centers not in compliance with standards for designation.**

Once a program has completed initial designation, or has successfully renewed their designation, there are no processes in place to address failure to maintain compliance with TCD program standards. Most centers are very conscientious about maintaining their status and holding their facility out as a designated center. Occasionally a center falls below performance standards, but it is not addressed until the next review cycle. The intent of this goal will be to develop a process for initiating a formal review of a program that fails to maintain compliance with TCD Program Designation standards, to include required action plans for returning within compliance and consequences if a center is unable to get back into compliance despite having an established action plan.

3. **Strengthen the partnership between the TCD System participants and other Missouri resources (ie. Missouri Injury and Violence Prevention Advisory Committee, MoDOT, etc.) to increase networking, utilize existing prevention partnerships, decrease redundancy related to injury and illness prevention, and to match injury and illness resources to targeted injury and illness prevention needs.**

Several other State of Missouri departments are involved or have a connection to the TCD Program, including (but not limited to) the State Highway Patrol, MoDOT, and Brain Injury Advisory Council. The intent of this goal is to identify members from these departments and councils that would be willing to join and participate in the TCD Task Force.

4. **Incorporate rehabilitation into the statewide TCD System in order to make TCD system improvements throughout the continuum of care.**

While not part of the initial rapid response to STEMI, stroke or trauma, rehabilitation after one of these critical events is definitely a significant part of the treatment process. The intent of this goal is to identify and involve representatives from the rehabilitation system of care as members of the TCD Task Force, and provide emphasis on rehabilitation as part of the overall TCD System.

TCD Programs

TCD has three Designated Programs: Trauma, Stroke and STEMI or “Heart Attack.”

Trauma

Trauma is a severe physical injury caused by an external source. Traumatic injuries can be caused by something as simple as a fall, or as highly complex such as a motor vehicle crash. It is the most frequent cause of visits to the emergency department, causing more than half a million visits annually. Trauma is the leading cause of death in ages 1-44 and is the fourth leading cause of death overall in Missouri. This does not include intentional injuries from homicide, suicide, etc.

- Injuries account for the second highest total for inpatient hospital charges – \$2 billion in 2006.
- Compared to the entire United States, Missouri has lower rates of emergency department visits for all three major categories of injuries – accidental, assault and self-inflicted. Unfortunately, Missouri has death rates from injuries exceeding the national rates for accidental injuries, suicides, falls and motor vehicle injuries.
- It is also noteworthy that Missouri’s death rates for unintentional injuries have increased 25% between 1991 and 2006. Even more alarming, our death rates for unintentional fall injuries have increased 73%.
- There are gaps, particularly in rural areas of Missouri, for timely access to a trauma center.
- Missouri has 29 designated trauma centers that are integrated into the continuum of care, including prevention and rehabilitation, and operate as part of a network of trauma receiving hospitals.ⁱ



Great Trauma Saves

A 33-year-old female was found lying in the road motionless and unresponsive. The patient became agitated en route to the hospital. EMS started an IV and placed the patient in spinal restriction and transported the patient to a Level I trauma center. The trauma team was waiting for the patient on arrival. The patient was intubated and resuscitated with blood and blood products. The patient was found to have a carotid artery dissection, ruptured spleen, lumbar spine fractures, sternal fracture and a traumatic brain injury. The patient progressed slowly throughout her hospital stay but was discharged to home and able to care for herself with assistance.

Male patient presented by EMS as the driver of an SUV that went off the road on a rain-slicked street, hitting a curb and going airborne striking a tree. It took 30 minutes to extricate the patient who was beneath the engine. The surgeon was at the patient's bedside on arrival to the hospital. The patient was intubated, and resuscitation included blood products at the facility. The helicopter was not able to fly because of weather so the patient was transported by ground to a Level I trauma center. He sustained multiple injuries including an amputation of the right leg. He had multiple facial fractures and cervical spine fractures. Because of the great work by the ambulance crew, the outlying hospital's trauma team and the team at the Level I trauma center, this patient survived and was able to leave the hospital.

Stroke

A stroke is a medical condition in which blood flow to the brain is interrupted or decreased, causing cell injury or death. The two main types of stroke are ischemic, which is due to a lack of blood flow, or hemorrhagic, which is bleeding inside the skull.

Every Minute Counts!

Estimated Pace of Neurological Loss *Typical Large-Vessel Acute Ischemic Stroke*

	Neurons	Accelerated Aging
Every Second	32,000	8.7 hours
Every Minute	1.9 million	3.1 weeks
Every Hour	120 million	3.6 years
10 Hours*	1.2 billion	36 years

Time = Brain

- Rapid intervention is crucial in the treatment of acute ischemic stroke
- Permanent neurological damage is more likely to occur the longer a stroke goes without medical attention

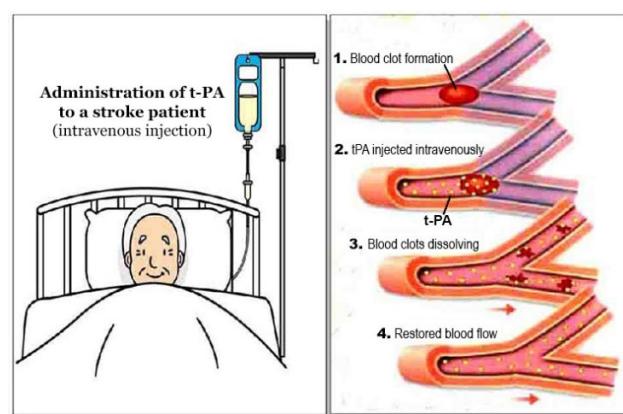
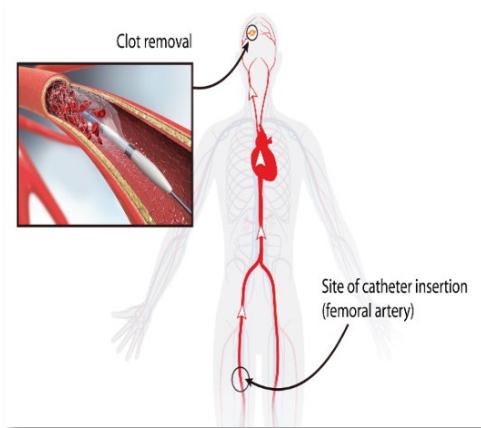
* The duration of a typical untreated acute ischemic stroke.

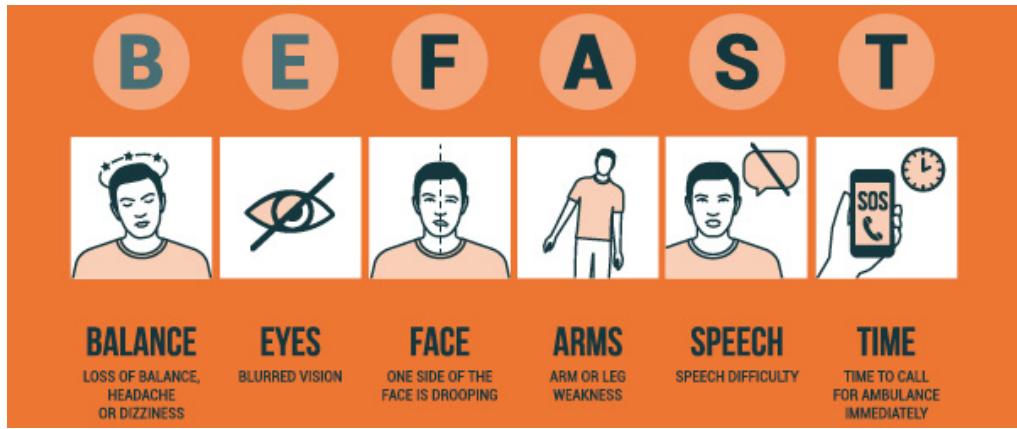
Source: National Institute of Neurological Disorders and Stroke (NINDS); Saver JL. Stroke. 2006;37:263.

Great Stroke Saves

Patient presented to EMS with confusion and difficulty speaking. Words were not appropriate and were repetitive. The patient was transported to a Level I Stroke Center and transported immediately to radiology for CT scan of the brain. The patient was met in the radiology department by the Stroke Team and the Neurologist. It was determined the patient was a candidate for thrombolytics (a clot-busting medication called tPA). The tPA was given within six minutes of arrival to the Emergency Department. The patient was admitted to the hospital and discharged two days later.

One stroke survivor was excited to reunite with some of his caregivers from the designated stroke center. He knew they had to see him to understand the impact of their fast care. He said, "I stood up and walked toward them, and all three of them just froze in their tracks and their chins dropped. They couldn't believe what they were seeing." Just five days earlier, he was driving home from the construction site of his future home in when he noticed that something did not feel right. His wife was out golfing, so he knocked on a neighbor's door for help. By then, his vision was blurry, "like I was looking through frosted glass," he said. The neighbor called 911. When the paramedics arrived, he was no longer able to speak and had to use physical cues to communicate. His symptoms pointed to a stroke. He needed to get to the hospital immediately. Within 43 minutes of his arrival at the nearest Level II Stroke Center, the stroke team administered tPA, a lifesaving treatment that immediately broke up the clot blocking blood flow in his brain. He had made it through one stroke with no disabilities — but the second day, while he was still in the Intensive Care Unit (ICU), his right side suddenly went limp. His doctor was in the room and immediately called for a transfer to a Level I Stroke Center. A small hole in his heart, called a patent foramen ovale, had allowed a larger blood clot to form and pass to his brain. He needed emergency brain surgery to remove the clot. At the Level I Stroke Center, he woke up from surgery feeling almost like his normal self. To the surprise of his medical team, he did not suffer any cognitive or physical damage from either of his strokes. He was released just two days after arriving — with no need for rehabilitation. Time is brain. The quicker you receive treatment following the onset of stroke symptoms, the better the outcome. This patient is a great example of this.





The table below reflects the marked improvement in response times. This data was reported as part of the 2022 re-designation survey in a Level III Stroke Center that was initially designated in 2016.

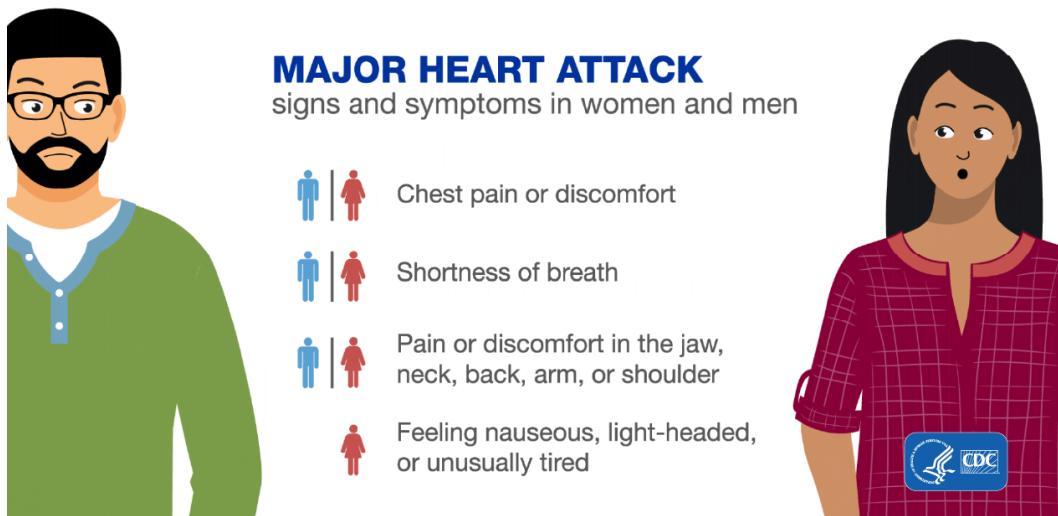
Year	Door to CT (Goal=15 min)	Door to CT Result (Goal=30 min)	Door to Needle (Goal=45 min)	Door In Door Out (Goal=60 min)
2016	31	59.2	110.5	245.6
2021	15.9	34.6	53.5	117.9
2022	9.8	26.8	NA	106.7

STEMI

ST-elevation myocardial infarction is a myocardial infarction for which the electrocardiogram (EKG) shows ST-segment elevation usually in association with an acutely blocked coronary artery. A STEMI is one type of heart attack that is a potentially lethal condition for

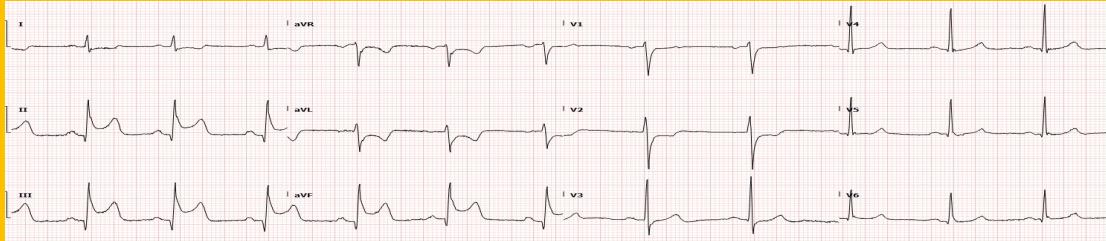
which specific therapies, administered rapidly, and reduce mortality and disability.

The more time that passes before blood flow is restored, the more damage that is done to the heart muscle.



Great STEMI Saves

56-year-old male presents to a Level IV STEMI center 28 minutes after developing chest pain, shortness of breath, nausea and diaphoresis. Six minutes after presentation to the Emergency Department, his 12 lead EKG shows marked ST segment elevation in multiple leads. (Door to EKG time = 6 minutes)

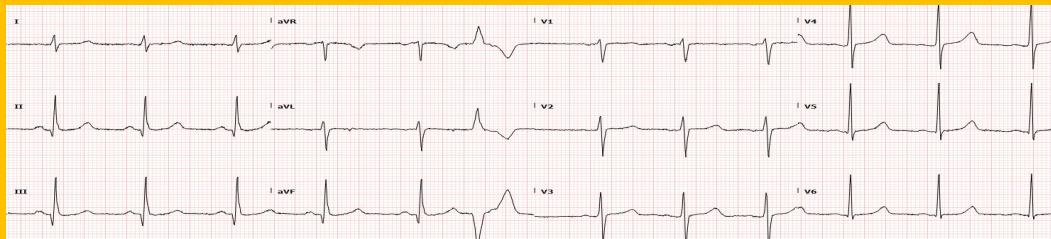


The receiving Level I center was contacted immediately. The Cardiac Cath Lab team was notified of the impending transfer. Because of the extended transport time, thrombolytics (a clot busting medication) were administered on recommendation of the Level I cardiologist. (Door to needle time = 27 minutes)

Sixty minutes after arriving at the Level IV center, the patient was transported by air to the Level I center. Thirty-one minutes after leaving the Level IV center, the patient arrived at the Level I center. The patient bypassed the Emergency Department and was transported directly to the Cardiac Cath Lab where he was found to be pain free and EKG showed resolution of the ST Segment elevation.

The patient was found to have blockage in his circumflex and right coronary arteries. He was discharged two days later without complications.

EKG 90 minutes after thrombolytic administration at Level IV center:



As a health care provider, I understand that these individuals may say that they were “just doing their job,” but that day they did so much more. They allowed a husband to return home to his wife, a father to return to his children, and a grandfather to play with his grandchild.” This man’s journey began the moment his wife contacted the 9-1-1 dispatcher, and that dispatcher used her training and skills to guide a person during the worst moment of her life over the telephone to perform CPR in an attempt to breathe life back into her husband. The Fire Protection District showed up and did not hesitate in immediately taking over these life saving measures and tending to a very emotional wife. Moments later, EMS arrived and worked seamlessly as a team with the fire district to regain a pulse. After several minutes of high-quality CPR, and what likely felt like an eternity to the patient’s wife, he regained consciousness and was quickly loaded into the ambulance and transported to a Level I STEMI center for ST-elevation that the crew immediately recognized on the EKG. Each step that was taken to save this man’s life was done compassionately, professionally, and effectively. To everyone involved this may have been “just another day” but to the patient and his family, these are all heroes, and they deserve recognition.



The table below reflects the goals of STEMI care in one Missouri Level III STEMI Center that was initially designated in 2015. Implementation of performance improvement measures have improved their response times particularly in the area of Door to EKG times.

	2015	2016	2017	2018	2019	2020	2021
Door to EKG (Goal ≤10 mins)	16.5	13.2	16.6	5.5	5	6.9	5
Time Transport in ED (Goal ≤10 mins)	13	12.7	10.5	9.5	11.3	9.5	14*
DIDO (Goal ≤30 mins)	46.8	48.7	33.8	35	37.5	36	42*

*Some of the increased times in ED and overall DIDO increases due to COVID and related precautions.

88-year-old female who presented with chest pains that started while she was doing her normal morning chores. She developed sharp chest pain and called her daughter. Her daughter, in turn, called 911. EMS responded and performed an EKG that showed Inferior Myocardial Infarction or STEMI. EMS immediately called an air ambulance to help transport the patient to a Level II STEMI Center. By the time EMS arrived at the helicopter landing zone, the air ambulance was there waiting for the patient. A "Code STEMI" was activated from the field, which in turn alerted the hospital's Interventional Cardiologist, as well as the Cath Lab team who waited for the patient at the hospital landing zone. The patient was taken straight to the Cath Lab, was found to have 100% occlusion to her right coronary artery, and was promptly treated with drug eluting stents x 2. The patient had an uneventful hospital stay and was discharged home 3 days later.

Here are a few successful highlights to this case:

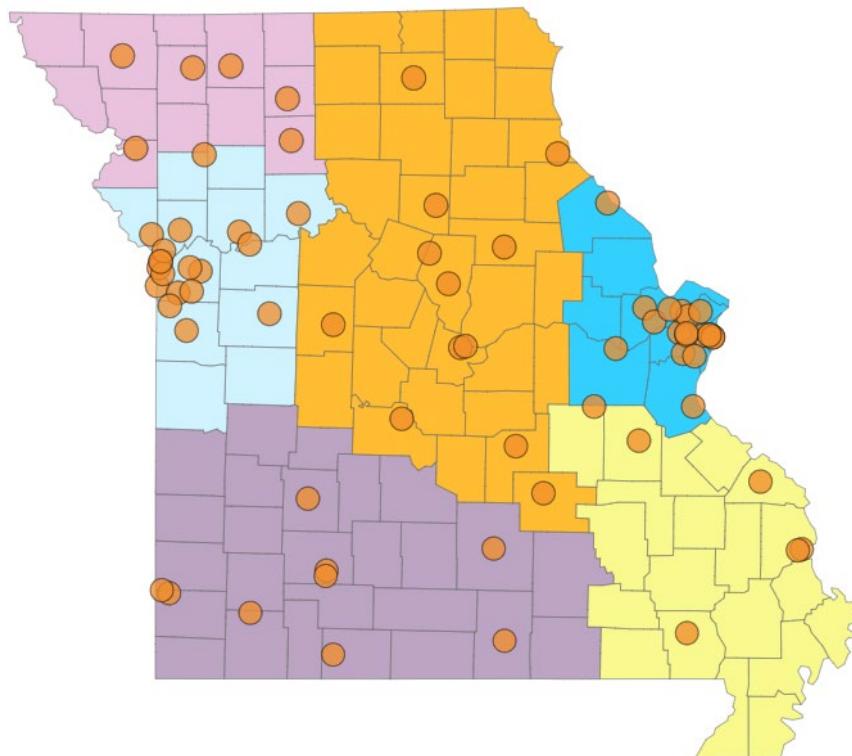
- **Family was aware to call 911 immediately when she was complaining of chest pains.**
- **EMS responded immediately and had patient contact in 18 minutes after the 911 call despite getting their ambulance truck stuck in the mud on their way to the patient.**
- **EMS did an EKG from patient contact.**
- **EMS activated Code STEMI immediately and called for air transport to the Level II STEMI Center.**
- **Air ambulance was already in the landing zone once EMS arrived.**
- **Cath Team was waiting for the patient at the hospital landing zone and took patient straight to the Cath Lab.**
- **Door to Balloon time was an impressive 17 minutes.**
- **911 to Device time was 137 minutes.**
- **First Medical Contact to Balloon time was 119 minutes.**

In Closing

The TCD program has a very aggressive plan for 2022. Some of the current projects include an update to the [DHSS TCD website](#) with individual resource sections for each designation. More surveys are being planned using the hybrid process, which combines aspects of on-site review with virtual participation. Many of the surveyors who assist with site reviews come from hospitals that are located hours away, and it is often very difficult for them to participate. The virtual process allows them to participate in the process from their home facility, which allows participation and surveys/investigations to be completed on a much timelier basis.

We look forward to the combined efforts of the TCD Program and the Task Force over the next year as we continue to advance care for the residents of Missouri.

MISSOURI TCD DESIGNATED CENTERS BY EMS REGION



The state is organized into six different EMS regions. The purpose behind these regions is to allow for geographic distribution across the state so that EMS service availability is roughly equivalent.

Interact with this map online! Determine facility coverage and TCD designation by filtering hospitals by STEMI, Stroke, Trauma or All Designations at health.mo.gov/TCD.

MISSOURI DESIGNATED TRAUMA CENTERS

Level I Pediatric Trauma Centers	City
Children's Mercy Hospital & Clinics	Kansas City, MO
SSM Health Cardinal Glennon Children's Hospital	St. Louis, MO
St. Louis Children's Hospital	St. Louis, MO
Level I Trauma Centers	City
Barnes-Jewish Hospital	St. Louis, MO
Cox Medical Center	Springfield, MO
Mercy Hospital Springfield	Springfield, MO
Mercy Hospital St. Louis	St. Louis, MO
Research Medical Center	Kansas City, MO
SSM Health St. Louis University Hospital	St. Louis, MO
St. Luke's Hospital of Kansas City	Kansas City, MO
University Health Truman Medical Center	Kansas City, MO
University of Missouri Health Care	Columbia, MO
Level II Trauma Centers	City
Centerpoint Medical Center	Independence, MO
Freeman Health System	Joplin, MO
Liberty Hospital	Liberty, MO
Mercy Hospital Joplin	Joplin, MO
Mercy Hospital South	St. Louis, MO
Mosaic Life Care at St. Joseph	St. Joseph, MO
North Kansas City Hospital	North Kansas City, MO
SSM Health DePaul Hospital – St. Louis	Bridgeton, MO
Level III Trauma Centers	City
Belton Regional Medical Center	Belton, MO
Cass Regional Medical Center	Harrisonville, MO
Citizens Memorial Hospital	Bolivar, MO
Lake Regional Health System	Osage Beach, MO
Mercy Hospital Washington	Washington, MO
Northeast Regional Medical Center	Kirksville, MO
Saint Francis Medical Center	Cape Girardeau, MO
SSM Health St. Joseph Hospital – Lake St. Louis	Lake St. Louis, MO
Western Missouri Medical Center	Warrensburg, MO

MISSOURI DESIGNATED STROKE CENTERS

Level I Stroke Centers	City
Barnes-Jewish Hospital	St. Louis, MO
Boone Hospital Center	Columbia, MO
Cox Medical Center South	Springfield, MO
Mercy Hospital South	St. Louis, MO
Mercy Hospital St. Louis	St. Louis, MO
Research Medical Center	Kansas City, MO
Saint Luke's Hospital of Kansas City	Kansas City, MO
SSM Health DePaul Hospital – St. Louis	St. Louis, MO
SSM Health St. Clare Hospital – Fenton	Fenton, MO
SSM Health St. Louis University Hospital	St. Louis, MO
University Of Missouri Health Care	Columbia, MO
Level II Stroke Centers	City
Barnes-Jewish St. Peters Hospital	St. Peters, MO
Capital Region Medical Center	Jefferson City, MO
Centerpoint Medical Center	Independence, MO
Christian Hospital Northeast-Northwest	St. Louis, MO
Freeman Health System	Joplin, MO
Lake Regional Health System	Osage Beach, MO
Lee's Summit Medical Center	Lee's Summit, MO
Liberty Hospital	Liberty, MO
Mercy Hospital Joplin	Joplin, MO
Mercy Hospital Springfield	Springfield, MO
Missouri Baptist Medical Center	St. Louis, MO
Mosaic Life Care at St. Joseph	St. Joseph, MO
North Kansas City Hospital	North Kansas City, MO
Ozarks Medical Center	West Plains, MO
Parkland Health Center - Farmington	Farmington, MO
Progress West Hospital	O'Fallon, MO
Saint Francis Medical Center	Cape Girardeau, MO
Saint Luke's East Hospital	Lee's Summit, MO
Saint Luke's North Hospital	Kansas City, MO
Southeast Hospital	Cape Girardeau, MO
SSM Health St. Joseph Hospital – St. Charles	St. Charles, MO
SSM Health St. Joseph Hospital – Lake St. Louis	Lake St. Louis, MO
SSM Health St. Mary's Hospital – Jefferson City	Jefferson City, MO
SSM Health St. Mary's Hospital – St. Louis	Richmond Heights, MO
St. Joseph Medical Center	Kansas City, MO
St. Luke's Hospital	Chesterfield, MO
St. Mary's Medical Center	Blue Springs, MO
Level III Stroke Centers	City
Belton Regional Medical Center	Belton, MO
Bothwell Regional Health Center	Sedalia, MO

Cameron Regional Medical Center	Cameron, MO
Cass Regional Medical Center	Harrisonville, MO
Cedar County Memorial Hospital	El Dorado Springs, MO
Citizens Memorial Hospital	Bolivar, MO
Cox Barton County Hospital	Lamar, MO
Cox Medical Center Branson	Branson, MO
Hannibal Regional Hospital	Hannibal, MO
Harrison County Community Hospital	Bethany, MO
Hedrick Medical Center	Chillicothe, MO
Lafayette Regional Health Center	Lexington, MO
Mercy Hospital Jefferson	Crystal City, MO
Mercy Hospital Washington	Washington, MO
Missouri Baptist Sullivan Hospital	Sullivan, MO
Moberly Regional Medical Center	Moberly, MO
Mosaic Medical Center – Albany	Albany, MO
Mosaic Medical Center – Maryville	Maryville, Mo
Northeast Regional Medical Center	Kirksville, MO
Perry County Memorial Hospital	Perryville, MO
Phelps Health Hospital	Rolla, MO
Pike County Memorial Hospital	Louisiana, MO
Poplar Bluff Regional Medical Center	Poplar Bluff, MO
Ray County Memorial Hospital	Richmond, MO
Ste. Genevieve County Memorial Hospital	Ste. Genevieve, MO
Texas County Memorial Hospital	Houston, MO
Washington County Memorial Hospital	Potosi, MO
Western Missouri Medical Center	Warrensburg, MO
Wright Memorial Hospital	Trenton, MO

Level IV Stroke Centers	City
Carroll County Memorial Hospital	Carrollton, MO
Cox Monett Hospital	Monett, MO
Salem Memorial District Hospital	Salem, MO

MISSOURI DESIGNATED STEMI CENTERS

Level I STEMI Centers	City
Barnes-Jewish Hospital	St. Louis
Boone Hospital Center	Columbia, MO
Cox Medical Centers – South Hospital	Springfield, MO
Freeman Health System - West	Joplin, MO
Mercy Hospital Joplin	Joplin, MO
Mercy Hospital South	St. Louis, MO
Mercy Hospital Springfield	Springfield, MO
Mercy Hospital St. Louis	St. Louis, MO
Missouri Baptist Medical Center	St. Louis, MO
North Kansas City Hospital	North Kansas City, MO
Research Medical Center	Kansas City, MO
Saint Francis Medical Center	Cape Girardeau, MO
Saint Luke's Hospital of Kansas City	Kansas City, MO
Southeast Hospital	Cape Girardeau, MO
SSM Health DePaul Hospital – St. Louis	St. Louis, MO
SSM Health Saint Louis University Hospital	St. Louis, MO
St. Luke's Hospital	Chesterfield, MO
University of Missouri Health Care	Columbia, MO
Level II STEMI Centers	City
Barnes-Jewish St. Peters Hospital	St. Peters, MO
Capital Region Medical Center	Jefferson City, MO
Centerpoint Medical Center	Independence, MO
Christian Hospital Northeast-Northwest	St. Louis, MO
Citizens Memorial Hospital	Bolivar, MO
Cox Medical Center Branson	Branson, MO
Lake Regional Health System	Osage Beach, MO
Lee's Summit Medical Center	Lee's Summit, MO
Liberty Hospital	Liberty, MO
Mercy Hospital Jefferson	Crystal City, MO
Mercy Hospital Washington	Washington, MO
Mosaic Life Care at St. Joseph	St. Joseph, MO
Ozarks Medical Center	West Plains, MO
Poplar Bluff Regional Medical Center	Poplar Bluff, MO
Progress West Hospital	O'Fallon, MO
Saint Luke's East Hospital	Lee's Summit, MO
Saint Luke's North Hospital	Kansas City, MO
SSM Health St. Clare Hospital - Fenton	Fenton, MO
SSM Health St. Joseph Hospital - St. Charles	St. Charles, MO
SSM Health St. Joseph Hospital - Lake St. Louis	Lake St. Louis, MO
Level II STEMI Centers - Continued	City
SSM Health St. Mary's Hospital - Jefferson City	Jefferson City, MO
SSM Health St. Mary's Hospital - St. Louis	St. Louis, MO
St. Joseph Medical Center	Kansas City, MO

St. Mary's Medical Center	Blue Springs, MO
University Health Truman Medical Center	Kansas City, MO
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Level III STEMI Centers	City
Bothwell Regional Health Center	Sedalia, MO
Hannibal Regional Hospital	Hannibal, MO
Lafayette Regional Health Center	Lexington, MO
Missouri Baptist Sullivan Hospital	Sullivan, MO
Northeast Regional Medical Center	Kirksville, MO
Parkland Health Center - Farmington	Farmington, MO
Phelps County Regional Medical Center	Rolla, MO
Western Missouri Medical Center	Warrensburg, MO
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Level IV STEMI Centers	City
Carroll County Memorial Hospital	Carrollton, MO
Cox Monett Hospital	Monett, MO
Hedrick Medical Center	Chillicothe, MO
Salem Memorial District Hospital	Salem, MO
Ste. Genevieve County Memorial Hospital	Ste. Genevieve, MO
Texas County Memorial Hospital	Houston, MO
Wright Memorial Hospital	Trenton, MO

APPENDIX I

Definitions

Time Critical Diagnosis System (TCD): A comprehensive statewide infrastructure with an inclusive approach to emergency medical care for Missouri.

Trauma: A severe physical injury caused by an external source. Traumatic injuries can be caused by something as simple as a fall or highly complex such as a motor vehicle crash.

Stroke: A sudden brain dysfunction due to a disturbance of cerebral circulation. The resulting impairments include, but are not limited to, paralysis, slurred speech, and/or vision loss. Ischemic strokes are typically caused by the obstruction of a cerebral blood vessel. Hemorrhagic strokes are typically caused by rupture of a cerebral artery.

ST-elevation myocardial infarction (STEMI): A myocardial infarction for which the electrocardiogram (EKG) shows ST-segment elevation usually in association with an acutely blocked coronary artery. A STEMI is one type of heart attack that is a potentially lethal condition for which specific therapies, administered rapidly, reduce mortality and disability. The more time that passes before blood flow is restored, the more damage that is done to the heart muscle.

Trauma Center: Levels I – III

- **Level I Trauma Center:** Is the highest level of designation and functions as a resource center for the hospitals within that region.
- **Level II Trauma Center:** Is the next highest level of designation dealing with large volumes of serious trauma.
- **Level III Trauma Center:** Is the next level with limited resources.

Stroke Center: Levels I – IV

- **Level I Stroke Center:** Is a receiving center staffed and equipped to provide total care for every aspect of stroke care, including care for those patients with complications, that also functions as a resource center for hospitals within that region, and conducts research.
- **Level II Stroke Center:** Is a receiving center staffed and equipped to provide care for a large number of stroke patients within the region.
- **Level III Stroke Center:** Is a referral center staffed and equipped to initiate lytic therapy and initiate timely transfer to a higher level of care. The Level III stroke center also provides prompt assessment, indicated resuscitation and appropriate emergency intervention for stroke patients. A Level III stroke center may admit and monitor patients as inpatients if there are designated stroke beds, and an established relationship exists with a Level I or Level II stroke center. The Level I or Level II stroke center provides medical direction and oversight for those stroke patients kept at the Level III center under that relationship.

- **Level IV Stroke Center:** Is a referral center in an area considered rural or where there are insufficient hospital resources to serve the patient population requiring stroke care. A Level IV stroke center provides prompt assessment, indicated resuscitation, appropriate emergency intervention and arranges and expedites transfer to a higher level stroke center as needed.

STEMI: Level I-IV

- **Level I STEMI Center:** Is a receiving center staffed and equipped to provide total care for every aspect of STEMI care, including care for those patients with complications. It functions as a resource center for the hospitals within that region and conducts research.
- **Level II STEMI Center:** Is a receiving center staffed and equipped to provide care for a large number of STEMI patients within the region.
- **Level III STEMI Center:** Is primarily a referral center that provides prompt assessment, indicated resuscitation, and appropriate emergency intervention for STEMI patients to stabilize and arrange timely transfer to a Level I or II STEMI center, as needed.
- **Level IV STEMI Center:** Is a referral center in an area considered rural or where there are insufficient hospital resources to serve the patient population requiring STEMI care. The Level IV STEMI center provides prompt assessment, indicated resuscitation, and appropriate emergency intervention and arranges and expedites transfer to a higher level STEMI center as needed.

APPENDIX II

DHSS-TCD Program Staff

- Nicole Gamm, RN, TCD System Administrator
- Michelle Harbert, RN, TCD Program Coordinator
- Arlinda Kinkead, RN, TCD Program Coordinator
- Peggy Huddleston, TCD/EMS Data Analyst

TCD Task Force Members

Jeffrey Coughenour, M.D.

Jeffrey Coughenour, M.D., joined the University of Missouri in August of 2008 and became medical director of the Mitchell Trauma Center in 2012. He completed his undergraduate and medical education at UMKC. Following residency, Dr. Coughenour completed additional training in surgical critical care and trauma surgery at the University of Kentucky. His primary interests include rural trauma care and trauma system development.

Steering Committee Member

Paramdeep Baweja, M.D.

Paramdeep Baweja, M.D., is an Interventional Cardiologist. He is an active participant with the TCD Task Force, he also serves as a member of the Task Force Steering Committee, which is responsible for setting strategic direction. In addition he is the Director of the Cath Lab and the STEMI program at Truman Medical Centers. He is an Associate Professor of Medicine at University of Missouri School of Medicine. He is acknowledged for his contributions in his field with the best teacher award for UMKC IM residency. He was elected to the Gold Humanism Society and is the recipient of the Leonard Tow Humanism in Medicine Award. He is well published in peer-reviewed journals and has multiple ongoing research projects and research grants.

Steering Committee Member

Nicole Gamm

Nicole Gamm has spent her entire career focused on the care of time-critical patients. Gamm currently works for the Missouri Department of Health and Senior Services as the Time Critical Diagnosis System Administrator. Her role includes having oversight of the Time Critical Diagnosis Unit, as well as conducting site reviews of hospitals wishing to pursue and maintain Missouri STEMI, Trauma, and Stroke designations, along with collaborating with EMS and other stakeholders to ensure the right patient receives the right care at the right time. Gamm obtained her Bachelors of Science in Nursing from St. Louis University and has 25 years of experience in Emergency Nursing. She has worked in both large urban and critical access hospitals in Missouri, and spent eight years in Las Vegas, Nevada working for a hospital that was designated for stroke, trauma, and STEMI. Gamm is going on her 10th year with the TCD Unit, and has been with the program since the passing of the Stroke and STEMI regulations in 2013.

Steering Committee Member

Sarah Willson

Sarah Willson is the Vice President of Clinical and Regulatory Affairs with Missouri Hospital Association. In addition to being a member of the Statewide TCD Task Force, she also serves as a member of the Task Force Steering Committee, which is responsible for setting strategic direction. Willson serves as a liaison between the department and member hospitals providing communication

and collaboration regarding the TCD System of care as well as a host of other regulatory and licensure issues. Willson has worked in healthcare over 25 years in a variety of clinical and administrative roles.

Steering Committee Member

Taz Meyer

Taz Meyer is the Chief of the Bureau of EMS for the Missouri Department of Health and Senior Services and is a member of the TCD Task Force Steering Committee. Prior to joining the Bureau of EMS in May of 2021, he served as Chief Executive Officer of a large ambulance service in eastern Missouri. Taz has extensive EMS experience as a field provider, educator and administrator. He also served on the initial TCD Task Force beginning in 2007, when the TCD program was being developed in Missouri, assisting with the push forward for passage of the enabling legislation in 2008.

Steering Committee Member

Erica Carney, M.D.

Erica Carney, M.D., is a graduate of the UMKC School of Medicine and completed her Emergency Medicine Residency as a Chief Resident at Truman Medical Center / UMKC SOM. She then completed her EMS Fellowship at Washington University School of Medicine in St. Louis, MO, and subsequently returned to Kansas City, MO as a double board-certified EM and EMS Physician. Dr. Carney currently practices as a staff physician in the Emergency Department at Truman Medical Center - Hospital Hill / UMKC SOM. She also serves as the EMS Medical Director for the City of Kansas City, Missouri (KCFD), the Missouri Region A EMS Medical Director, Central Jackson County Fire Protection District's Medical Director, the UMKC EMS Education System Medical Director, and is the Medical Director for the Kansas City Zoo. Dr. Carney chairs the Kansas City Health Commission, was recently elected the as the State EMS Medical Director and remains active with NAEMSP and the Eagles.

Steering Committee Member

Steve Bollin

Steve Bollin is director of the Division of Regulation and Licensure, Missouri Department of Health and Senior Services. In addition to helping with TCD Task Force organization, he also serves as a member of the Task Force Steering Committee, which is responsible for setting strategic direction. Prior to coming to DRL, Bollin worked in health care for over 36 years in a variety of clinical and administrative roles in multiple facilities that provided advanced level care for STEMI, Stroke, and Trauma.

Steering Committee Member

Craig Schnieders

Craig Schnieders began with Regulation and Licensure in 2008 as a Fiscal Manager focusing on fiscal note preparation and grant management. He was promoted to Chief of the Fiscal Unit in 2015 and directed the division's budget request, purchasing and expenditure reporting. He began his tenure as the deputy director in 2019, providing leadership and operational direction to the division's various programs.

Heidi N. Lucas

Heidi N. Lucas is state director of the Missouri Nurses Association. Previously, she held various roles throughout the Missouri Community Action Network, has worked in the labor sector in Pennsylvania, and in human resources and recruiting in Chicago. Due to this wide range of experiences, Lucas is well versed in issues relating to health and healthcare policy, nursing issues and policy, legislative

advocacy, anti-poverty policies and strategies, organizing, grassroots community building, and equity.

Lynthia Andrews, M.D.

Dr. Lynthia Andrews, M.D., has been a champion of emergency medicine for over 40 years. She is passionate about education and believes the key to good health care in Missouri is best achieved when all things medical are patient-centered. Dr. Andrews has been the medical director for both ground and air programs in northwest Missouri. Over the years, she has participated in many efforts to improve EMS operations and regulations. She was part of the initiative to develop a trauma system in Missouri. Her involvement at the state level led to four friends using napkins and ink pens after dinner nearly 20 years ago to etch out the dream for the Time Critical Diagnosis (TCD) System. Dr. Andrews continues to be involved in TCD and currently serves as a member of the TCD Task force as well as the Chair of the State Advisory Council on EMS (SAC).

Sarah Luebbert

Sarah Luebbert is the executive director for the Missouri College of Emergency Physicians (MOCEP). MOCEP's mission is to support the highest quality emergency medicine care and to serve as advocates for our patients, our members and our specialty.

Pam Jackson

Pam Jackson is the trauma program manager at Saint Luke's Hospital in Kansas City, which is a Level I Trauma Center. She is a masters' prepared nurse with a passion for trauma that has been demonstrated in her involvement in Level I and Level II trauma programs over the past 25 years. Jackson is actively involved in state and regional trauma care and Time Critical Diagnosis (TCD). She is a charter member of the State TCD Task Force Committee.

Brenda Rackers

Brenda Rackers is Senior Legal Counsel with the Missouri Department of Health and Senior Services. She provides legal counsel to a variety of programs in the Department, including the Time Critical Diagnosis Unit and the Bureau of Emergency Medical Services. Rackers has been with the Department for 13 years.

William Koebel

William Koebel is the administrator of the Section for Health Standards and Licensure, within the Division of Regulation & Licensure, Missouri Department of Health and Senior Services. The Section for Health Standards and Licensure consists of the Bureaus of Hospital Standards, Home Care and Rehabilitation Standards, Ambulatory Care, Narcotics and Dangerous Drugs, Diagnostic Services and Emergency Medical Services. Koebel has held the administrator position since 2011. Prior to his current position, he served as the Survey and Compliance Manager for the Section for Long-Term Care Regulation.

Lauren Bontemps

Lauren Bontemps is the quality improvement manager for Iowa, Kansas and Missouri stroke and heart attack systems of care for the American Heart Association. Bontemps has a robust background in clinical research and a passion for health equity. She previously worked at Washington University School of Medicine/St. Louis Children's Hospital and Northwestern Memorial Hospital as a Clinical Research Coordinator. Most recently, she managed several health science studies at the University of Chicago's National Opinion Research Center (NORC).

Sean A. Nix, M.D.

Sean A. Nix, M.D., is the trauma medical director at Saint Luke's Hospital in Kansas City. He is a fellow, American College of Osteopathic Surgery, the American College of Surgery, the American College of Critical Care Medicine, and is a member of the America Association for the Surgery of Trauma. Dr. Nix has been an attending trauma surgeon since 2009 after completing his surgical residency at Des Peres Hospital and fellowship at Washington University in Saint Louis. His work experience includes working as trauma surgeon at Saint John's, surgery faculty at University of Oklahoma, and trauma surgeon and surgical critical care director at Riverside Regional Medical Center.

Justin Duncan

Justin Duncan is the chief executive officer for Washington County Ambulance District and President of the Missouri EMS Association. In addition to his role on the TCD Task Force, he is an active participant and leader in many states, regional and local EMS/Mobile Healthcare functions. Duncan has nearly two decades of experience as an EMS clinician, clinical educator and leader.

Christopher Sampson, M.D.

Christopher Sampson, M.D., is board certified in both emergency medicine and emergency medical services. Dr. Sampson works for the University of Missouri School of Medicine in Columbia. He is the Director of Education and Clinical Research for the Department of Emergency Medicine. He is medical director of multiple EMS and fire departments in central Missouri. He serves as a TCD site physician reviewer and member of the TCD Task Force.

Debbie Leoni

Debbie Leoni is the director of Cardiovascular Outreach Services for SoutheastHealth in Cape Girardeau. Leoni is the STEMI Coordinator, a member of the TJC Comprehensive Cardiac Center core committee, and is responsible for the cardiovascular registries including STS, NCDR and GWTG. She is active in the regional EMS committee and helps coordinate regional education, screenings and community programs.

Peter Panagos, M.D.

Peter Panagos, M.D., is Professor and Vice-Chair of Emergency Medicine and Neurology at Washington University in St Louis. Following a year of surgical training at Naval Medical Center San Diego, he graduated and received his wings as a Naval Flight Surgeon. In 2002, he completed a residency in Emergency Medicine at the University of Cincinnati, and subsequently completed a Neurovascular Emergencies/Stroke Fellowship at the same institution in 2003. At Washington University, he has served as PI for multiple NIH and Industry funded clinical trials including current NINDS StrokeNet. He is the director of Neurovascular Emergencies in the Division of Emergency Medicine and co-director of the Barnes-Jewish Hospital/Washington University Stroke Network. He has served as AHA co-chair of Mission: Lifeline Stroke, AHA Chair, Emergency Neurovascular Care Committee (ENCC) and is the past chair of the ASA Stroke Council Leadership Committee. He is Associate Editor of Academic Emergency Medicine and an Emergency Medicine Oral Board Examiner.

Kat Probst

Kat Probst is the assistant chief executive officer for Adair County Ambulance District. Probst's additional responsibilities entail oversight of Operations, Patient Billing, Information Technologies, Compliance and Exposure Control for the District. Her career began in emergency service in 2005, and she obtained her paramedic license in 2008. She served as a member of the Executive

Leadership Team for the District in 2010. Her passion for the EMS field is reflected in her services across the state of Missouri representing the EMS industry in many capacities such as the president of the Missouri Ambulance Association, vice chair of Central Region EMS, and numerous task forces locally and statewide to enhance EMS services across the state. Some of these task forces and committees include advocating at the legislative level, CIT in EMS statewide, Non-Urban & Northeast Healthcare Coalition, Board member of NEMO Heart Health, EMS Mutual Aid & Disaster Coordination, and Time Critical Diagnosis committees at the local and state level.

Jeff Howell

Jeff Howell is the executive vice president of the Missouri State Medical Association (MSMA). MSMA is the largest professional organization of physicians in the state. Howell is an attorney and has served physicians as a lobbyist in Missouri since 2006.

Mark Alexander

Mark Alexander is the director of CoxHealth EMS and has served in this capacity since December 1987 and was the director of Webster County Ambulance for from the spring of 1985 through December 1987. He was a field paramedic from 1978 through 1987. Alexander is a member of the State Advisory Council on EMS appointed in 1996 and still serve on the SAC as the Legislative Committee Chairperson. He is a past president and current board member of the Missouri Ambulance Association, a past president of the SW. Missouri Critical Incident Response Team, and currently serve as the vice chairperson of the Missouri Emergency Service Agent Corporation, (MoEMSAC) that administers the EMS FRA program for Missouri.

Michael Wallace

Michael Wallace has been a paramedic for over thirty years and is one of the Outreach Education Managers for Global Medical Response (GMR). Prior to working for GMR, he worked for American Medical Response in Independence, Missouri and was responsible for clinical care and education. Michael spent 24 years with the Central Jackson County Fire Protection District in Blue Springs, Missouri and retired as the EMS officer for the department. Wallace currently serves as the chair of the MARCER TCD subcommittee in Kansas City, MO.

Brian Froelke, M.D.

Froelke, M.D., is board certified in Emergency Medicine and holds a subspecialty certification in EMS. Dr. Froelke is the medical director for Christian Hospital EMS and the associated municipalities. He has served in several political roles including regional EMS Medical Director for the Missouri East Central Region since 2007 and was State EMS Medical Director for Missouri from 2013-1016. Dr. Froelke also participates in leadership and consultation roles for several organizations including chief medical officer for Missouri Disaster Response System, the Interstate Disaster Medical Collaborative, and FluidIQ and EMS Medical Advisor for Center for Patient Safety and MedAware Solutions.

Jami Blackwell

Jami Blackwell is a system director for CoxHealth overseeing the Time Critical Diagnosis programs. She has been with CoxHealth for 36 years working in the Emergency Department, Flight Nursing and most recent, the director of Trauma and Acute Care Surgery. She currently serves as a director at large on the Society of Nurses Board.

Ruby Mehrer

Ruby Mehrer has been involved in EMS since 1985 when she became a flight nurse for Research Eagle. She initially trained and licensed as an EMT and as a paramedic. Mehrer continued to further

her health care career, pursuing and completing a degree in Nursing. After working for a few years as an Emergency Room Nurse, she had an opportunity to be one of the first flight nurses for a new air ambulance service established in Kansas City. She progressed from Flight Nurse to chief nurse, program director, clinical manager, director of business development, and ultimately to director of government relations. Mehrer's many different roles have allowed her to be involved in numerous EMS organizations at local, regional, state and national levels, so she was a great fit for the TCD Task Force.

April Ostendorf-Morris

April Ostendorf-Morris is an advance practice nurse and Stroke Coordinator at Saint Francis Healthcare System. In addition to serving on the TCD Task Force, she also serves on the TCD Annual Report Committee and TCD Data Subcommittee. She is the current president of the Association of Stroke Coordinators, a member of the EMS Regional Committee Southeast Region and Southeast Missouri Emergency Medical Services Network. Ostendorf-Morris has over 25 years of healthcare experience in a variety of clinical and leadership roles including Critical Care, Trauma, Neuroscience and Stroke.

Joseph Finney, M.D.

Joseph Finney, M.D., a native of the Saint Louis area, is a former EMT and current Pediatric Emergency Medicine and EMS fellow at Washington University School of Medicine. He completed residency in Pediatrics at Rush University in Chicago 2019, and is currently completing his final year of the first-ever combined EMS and Pediatric Emergency Medicine Fellowship. His primary interests include prehospital education and Quality Improvement for the care of critically ill children

Peggy Huddleston

Peggy Huddleston spent 20 years in the healthcare field in varies roles. She has been with Missouri Department of Health and Senior Services, TCD Unit going on her ninth year and has been with the program since 2014. In that time, she has been instrumental in creating and maintaining the patient registries for all three programs, trauma, stroke and STEMI. She spearheaded the project to integrate the EMS electronic patient care reports (ePCR) into all of the patient registries for the continuum of care. She also worked with the National Emergency Medical Services Information System (NEMSIS) to submit Missouri's ePCR's for national comparison.

Gene Bradley

Gene Bradley is the EMS Chief of the Atchison-Holt Ambulance District, an ALS Super Rural Provider in Northwest Missouri. Bradley has been involved in EMS for over 39 years. He has held a variety of positions over those 30 plus years. He has been a field paramedic for busy urban services, and for the last 30 years has been working in administrative positions for rural and super rural services. In 2004 he helped introduce paramedics into the Emergency Room working jointly with the state director of EMS in Nebraska on a pilot project. The pilot project brought ALS care to Super Rural Nebraska partnering with hospitals that allowed funding through the Critical Access Hospital Program. Bradley has been actively involved in the MAA for the last 25 years. Gene is the former president of the Missouri Ambulance Association, and the former chair of the American Ambulance Associations Education Committee.

Michelle Harbert, RN

Michelle Harbert, RN, has 17 years of experience as a nurse in a variety of health care settings and locations, including critical care ranging from a Level 1 Trauma center to smaller critical access

hospitals. She joined TCD in July of 2021 as the TCD Program Coordinator and is excited for the opportunity to be a part of this healthcare program that is improving the lives of Missourians.

Arlinda Kinkead, RN

Arlinda Kinkead, RN, came to TCD in 2014. She worked with two other team members to design processes, create documents, evaluate the hospital program, review results, and establish working relationships with experts in the fields of Trauma, STEMI and Stroke. This is bringing the STEMI and Stroke programs to life and reviving Trauma standards.
